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ABSTRACT

Each publication in the Eisenhower National Clearinghouse (ENC) Focus series presents a small selection of the Clearinghous collection focused on a topic of particular interest to mathematics and science teachers. In addition to meeting general requirements for inclusion in the ENC collection, curriculum materials in these publications are appropriate to the specific topic of the issue; support hands-on, active, inquiry-based methods of instruction; and are readily available. This issue offers a sampling of useful teaching materials and other resources that promote equity in mathematics and science education. Each entry contains title, author, date, publisher, grade level, target audience, material type, language, subjects, abstract, and ordering information. (MKR)

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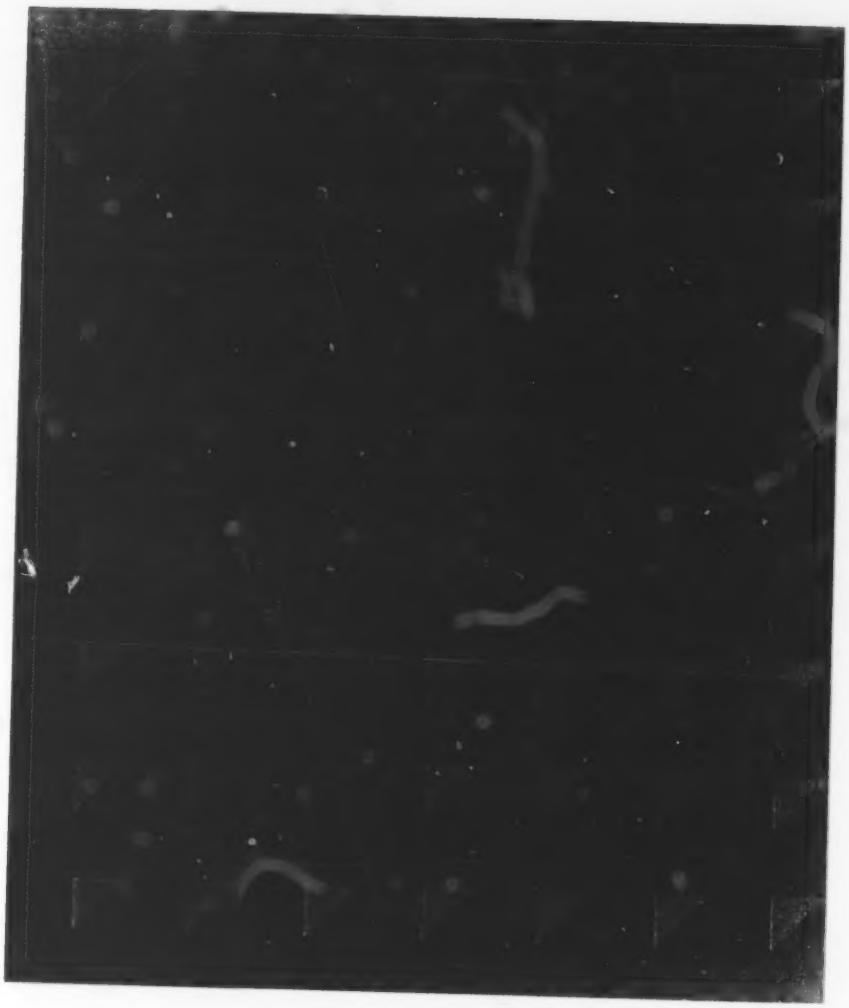
ENC FOCUS

Issue 1, 1994

Equity in the Classroom: Mathematics and Science Materials and Resources for Elementary Teachers



SE 057 924

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What Can Readers Expect from ENC Focus ?

Each publication in the *ENC Focus* series presents a small selection of the Clearinghouse collection focused on a topic of particular interest to mathematics and science teachers. Fifteen to 20 catalog records describing curriculum materials and supplementary resources are included, accompanied by a bibliography listing relevant readings and organizations.

Materials profiled in the *ENC Focus* series are selected by Clearinghouse staff. Each issue is reviewed by the ENC Mathematics and Science Advisory Boards. In addition to meeting general requirement for inclusion in the ENC collection, curriculum materials in these publications are: appropriate to the specific topic of the issue; support hands-on, active, inquiry-based methods of instruction; and are readily available.

The publication contains a cross-section of materials in different media or formats and at various grade levels. Indicators of usefulness or other evaluative information, when available, are included in the catalog record. If authors note that materials were developed in accord with national or State curriculum standards, the particular standards supported are listed.

Ordering and price information are provided, so that teachers can easily obtain materials that seem useful. The readings and organizations profiled in each issue are also resources for teachers who wish to learn more about the topic. The Eisenhower Clearinghouse Library as well as the Regional Consortia listed on the back cover are additional sources for finding more information on topics profiled in the series.

Issues of *ENC Focus* are published several times per year and are available in both print and electronic forms. The electronic versions are located on a computer at the Eisenhower National Clearinghouse. After using the telnet command to connect to the ENC Gopher server (galileo.enc.org), type the word gopher at the login prompt to display the menu. No password is necessary. (Hit the return key at the password prompt.) The publications are also available via FTP (file transfer protocol) in the /pub directory on the galileo.enc.org server. Both print and electronic versions are in the public domain and may be freely copied and distributed.

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ENC FOCUS *Equity in the Classroom*

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About ENC Focus

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Introduction: Equity in the Classroom

The word "equity" may take on different meanings, depending upon the context in which it is used. In this publication, the equity focus refers to a range of strategies that teachers and administrators can employ to create learning situations in which all students flourish. This issue of *ENC Focus* highlights materials and resources that can be useful in assuring that gender, minority status, disabilities, and English language facility do not become barriers to full participation of students in science and mathematics instruction at the elementary level.

Females, minorities, and disabled persons have historically been underrepresented in mathematics and science-related careers. The professional organizations most concerned with the study and teaching of mathematics and the sciences have taken a firm stand in favor of enhanced efforts to reach and adequately teach these populations.

The authors of *Everybody Counts*, published by the Mathematical Sciences Education Board in 1989, note that because "mathematical illiteracy both impedes socioeconomic equality and diminishes national productivity" it can be seen as "both a personal loss and a national debt" (p.17–18). Examining reasons for lower achievement of females in mathematics, the report indicates that "gender differences in mathematics performance are predominantly due to the accumulated effects of sex-role stereotypes in family, school, and society" (p. 23). In order to combat the negative effects of these stereotypes, instruction must address attitudinal as well as educational objectives.

The National Council of Teachers of Mathematics (NCTM) *Assessment Standards for School Mathematics (Working Draft, October 1993)* emphasizes the need for equity in assessment practices. Standard 3 states that "Assessment should promote equity by giving each student optimal opportunities to demonstrate mathematical power and by helping each student meet the profession's high expectations" (p. 39). The assessment process should include opportunities for choice, take into account individual student perspectives and ways of knowing, use results of assessment to support learning opportunities, and involve teachers and other professionals with varying perspectives.

In *Science for All Americans*, the American Association for the Advancement of Science identifies those understandings and ways of thinking that are essential to achieving scientific literacy. The authors of this report note the particular need to focus on "those who in the past have largely been bypassed in science and mathematics education: ethnic and language minorities and girls" (p. x).

Science educators are currently engaged in a national dialog to define appropriate standards for science instruction at the elementary and secondary levels. The *July 1993 Progress Report* of the National Committee on Science Education Standards and Assessment highlights equity concerns, noting that a "commitment to science for all implies inclusion not only of those who traditionally have received encouragement and opportunity to pursue science, but of women and girls, all racial and ethnic groups, students with disabilities, and those with limited English proficiency" (p. 1). The report also states that in focus groups, disabled students have indicated that low expectations of teachers, parents, and the students themselves are often more limiting than their disabilities.

The intent of this issue of *ENC Focus* is to offer a sampling of useful, currently available teaching materials and other resources that promote equity in mathematics and science education. A chart labeled "Overview of Contents" lists titles and features of materials. Detailed catalog records are arranged by title in alphabetical order. A list of related readings on equity and an overview of organizations concerned with equity in mathematics and science education are also provided.

Other materials targeted at special populations are described in the Eisenhower National Clearinghouse Catalog (available online in Fall 1994). Because only a limited number of items can be included, every group or population may not be equally represented in this issue. Future publications on equity issues will present information about additional curriculum resources. Suggestions for materials to be considered for inclusion in later publications are welcome and should be forwarded to the Editor.

Equity in the Classroom:

Mathematics and Science Materials and Resources for Elementary Teachers

Overview of Contents

Title	Grades: K–3	Grades: 4–8	Science	Mathematics	Integrated	Free	1–10 dollars	11–25 dollars	26+ dollars	Female students	ESL/LEP students	Minority students	Disabled students
Add-Ventures for Girls: Building Math Confidence		x		x					x	x			
Biological Ocean: Hello Down There!	x	x	x		x			x			x	x	
Caete de Gusto Hacia el Otono con las Matematicas y Ciencias	x		x	x	x			x			x	x	
Decisions About Mathematics		x		x				x		x			
Engineering Adventure		x	x						x		x	x	
Fizz and Martina at Blue Falls High		x		x					x		x		
Hands-on Activities to Encourage Girls in Mathematics		x		x			x			x			
Laboratories and Classrooms in Science and Engineering			x	x		x							x
Math for Girls and Other Problem Solvers	x	x		x			x			x			
Mindset for Math: Techniques for Identifying and working with Math-Anxious Girls		x		x			x			x			
Native American Culture Across the Math & Science Curriculum		x	x	x	x		x					x	
Operation SMART Research Tool Kit		x	x	x					x	x		x	x
Piezas y Disenos: Un Mosaic de Matematicas y Ciencias		x	x	x	x			x			x	x	
Primariamente Fisica: Investigaciones del Sonido, la Luz y la Energia Termica . . .	x		x	x	x			x			x	x	
Problem Solvers: People with Disabilities in Engineering Careers			x					x					x
Science Teams	x	x	x						x	x		x	
Scientific Reasoning		x	x				x		x				x
Wiskit: Women in Science Resource Kit			x	x		x				x			

ENC-000188

Title:	**Add-ventures for girls: building math confidence, junior high teacher's guide**
Author:	Research and Educational Planning Center, University of Nevada
Date:	c.1990
Publisher:	Newton, MA: WEEA Publishing Center
Grade level:	7; 8; 9
Target audience:	Female students
Material type:	Activity books
Language:	English
Subjects:	Area (Geometry); Attitudes; Career exploration; Computers; Decimal fractions; Employment patterns; Equal education; Equations (Mathematics); Equity; Estimation (Mathematics); Fractions; Geometry; Graphing (Mathematics); Mathematics; Mathematics anxiety; Mathematics careers; Measurements; Percentage; Perimeter (Geometry); Place value; Probability; Problem solving; Ratios (Mathematics); Sex differences; Spatial ability; Statistics; Stereotypes; Volume (Mathematics); Whole numbers.
Abstract:	This book describes attitudes, self-perceptions, and feelings reinforced by society, parents, teachers, and peers that can deter girls and young women from excelling and achieving in mathematics. The guide provides strategies, activities, and resources that middle school teachers can use to help girls overcome barriers, continue math studies, and select math-related careers. The book is designed to reverse negative patterns and build girls' positive attitudes and skills in mathematics. Each chapter in the guide begins with a discussion of research findings on practices and/or student attitudes that affect girls' math attitudes and performance. Suggested strategies, activities, and resources that teachers can use to address each topic are described. Suggestions are based on research findings, published resources, and practical ideas from math teachers. Most, but not all, of the activities in this book include math skill practice while covering the topic areas of concern. Descriptions of activities include objectives, appropriate grade levels, list of math concepts/skills addressed in the lesson/activity, time needed, materials, procedures, variations, worksheets, and handouts. Each chapter ends with an annotated resource list of materials that contains related ideas and activities. (AM)
Evaluation:	Published Reviews: Welchman-Tischler, Rosamond. *Arithmetic Teacher*. September 1992. Vol. 40, Issue 1, p.58. Mizer, Robert, Robert W. Howe, and Patricia Blosser. *Mathematics: Promising and Exemplary Programs in Elementary and Secondary Schools*. Columbus, OH: ERIC Clearinghouse for Science, Mathematics and Environmental Education, 1990. pp. 6–7. ED 335230.

Order from: WEEA Publishing Center
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
Telephone no.: 617–969–7100; Toll free no.: 800–225–3088; $28.00.

ENC-000039

Title: **The biological ocean: hello down there! = El océano biológico: qué tal allí abajo!**

Series: Wet and wild: a multidisciplinary marine education teacher guide, grades K–6; Unit 4

Author: Prepared under the auspices of the Sea Grant Program, Institute for Marine and Coastal Studies, University of Southern California

Date: c.1983, 1986

Publisher: Los Angeles, CA: Evaluation, Dissemination and Assessment Center, California State University

Grade level: Kindergarten; 1; 2; 3; 4; 5; 6

Target audience: Bilingual students; Hispanic-American students

Material type: Integrated materials; Teaching units

Language: Bilingual; English; Spanish

Standards/ guidelines: California State Science Curriculum

Subjects: Algae; Art; Environmental education; Fishes; Mammals; Marine biology; Mythology; Oceanography; Poetry; Porpoises; Sciences; Seashore ecology; Seaweed; Whales.

Abstract: This bilingual marine education curriculum guide for teachers of grades K–6 is the fourth unit in the "Wet and Wild" series. Content is covered first in English and then repeated in Spanish. This integrated unit on marine life includes six sections covering the topics: marine algae; seashore life; fish; marine mammals; sea mythology and poetry; and supplementary activities and resources. The topics are divided into 21 multidisciplinary lesson plans with activities, experiments, and projects that follow the California State Science Curriculum. Lessons are organized by grade levels: K–3, K–6, and 4–6. Each activity includes stated objectives, necessary materials, instructions for conducting the activity, and suggested questions with answers. Instructional methods concentrate on hands-on and observational learning. Informal assessment is provided for each lesson in the form of suggested questions. The intended outcomes emphasize problem solving and thinking skills. A resources section contains background information for the teacher, instructions for how to set up a sea life aquarium, a search puzzle, a bibliography, and a list of 60 films related to the subject content. (TDB)

Funding: United States Department of Commerce, National Oceanic and Atmospheric Administration, Office of the Sea Grant; Grant no.: 04–7–158–44113; 04–8–MO1–186.

Other series titles: Marine ecology: you scratch my back, I'll scratch yours. Ocean management: who owns the sea? Research: innerspace explorers. The economic sea: riches of the sea. The physical ocean: wet, wild, and deep.

Order from: Evaluation, Dissemination and Assessment Center
California State University, Los Angeles
Los Angeles, CA 90089
Telephone no.: 213–740–1961; FAX no.: 213–740–5936;
Unit 4 text: ISBN 0–89755–019–6; $20.00.

ENC-000002

Title: **Cáete de gusto hacia el otoño con las matemáticas y ciencias = Fall into math and science**

Series: AIMS Program; Grades K–4 series

Author: Judith Hillen, Arthur Wiebe, Dave Youngs, editors.

Date: c.1988

Publisher: Fresno, CA: AIMS Education Foundation

Grade level: Kindergarten; 1

Target audience: Bilingual students; Hispanic-American students

Material type: Activity books; Integrated materials

Language: Bilingual; English; Spanish

Subjects: Autumn (Season); Equations (Mathematics); Fractions; Geometry; Mathematics; Sciences

Abstract: Activities Integrating Mathematics and Science (AIMS) books primarily integrate mathematics and science but also provide coordinating activities related to other curriculum areas including language arts, social studies, physical education, art, and music for grades K–9. This book includes 15 K–1 activities related to the fall season. Each activity generally includes: topic area, introductory statement, key question, math skills and science processes, materials, background information, management, advanced preparation, procedure, discussion, extensions, curriculum coordinates, and illustrated student worksheets. The student worksheets are written in both Spanish and English. The intended outcomes in this book are math skills and science processes. The math skills include attributes, counting equations, estimating, fractional numbers, generalizing, geometry, graphing skills, logical thinking, measuring, patterns, predicting, recording data, and sorting. The science processes include observing and classifying, measuring, estimating, controlling variables, gathering and recording data, interpreting data, applying and generalizing, and comparing. (CCC)

Evaluation: Published Reviews: Deal, Debby [science consultant]. "A Look at Project AIMS." *School Science and Mathematics*. January 1994. Vol. 94, Issue 1, pp. 11–14.

Other series titles: Brinca de alegria hacia la primavera con las matemáticas y ciencias= Spring into math and science. Patine al invierno con matemáticas y ciencias = Glide into winter with math and science.

Order from: AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747–8120
Telephone no.: 209–255–4094; FAX no.: 209–255–6396; $14.95.

ENC-000189

Title: **Decisions about mathematics**

Series: Fair play: developing self-concept and decision-making skills in the middle school

Author: Florida State University

Date: c.1983

Publisher: Newton, MA: WEEA Publishing Center

Grade level: 6; 7; 8

Target audience: Female students; Male students

Material type: Teaching units

Language: English

Subjects: Attitudes; Averaging (Mathematics); Career exploration; Data collection; Employment patterns; Employment potential; Employment statistics; Equal education; Equity; Graphing (Mathematics); Mathematics; Mathematics careers; Money; Percentage; Ratios (Mathematics); Rounding (Mathematics); Sampling; Sex differences; Statistics (Mathematics); Stereotypes.

Abstract: This unit is one part of a 6-unit program entitled "Fair Play: Developing Self-Concept and Decision-Making Skills in the Middle School." Program goals are: to help students expand their self-concept in relation to their female or male identity, including their role behavior, personality traits, and occupational aspirations and expectations; to increase students' self-confidence and participation in making decisions; and to increase students' academic achievement by helping students change stereotypic attitudes toward particular content areas and alerting them to the relationship between subject matter and occupational opportunity. In this 18-lesson mathematics unit, students develop data collection and interpretation skills and use these skills to examine female and male differences in attitudes toward math, choice of careers, and treatment in the labor force.

The unit is structured according to a decision-making model. In Part I, "Math and Money," students explore differences in female and male attitudes toward math and employment patterns. In Part II, "Collecting and Analyzing Data," students learn data analysis skills, such as averaging, determining ratios, determining percents, rounding, and constructing and interpreting frequency tables, pictographs, histograms, line graphs, and circle graphs. Students use these skills to collect and analyze information about female and male economic and educational issues. In Part III, "Your Future," students use information from the previous sections to think about their own career options and attitudes toward mathematics.

In each lesson, students participate in a variety of activities, including reading the text and answering questions (with or without partners), class discussions, small-group activities, and role-playing. The teacher's guide includes student materials, detailed annotations to aid in planning and presenting each lesson, and pretests and posttests with answers. Evaluation exercises at the end of many lessons may be used as quizzes, tests, or self-evaluation activities. Lessons can be used on a daily basis requiring 4–5 weeks, interspersed in the regular curriculum program, or used individually. Three possible levels are outlined for each lesson, corresponding to skill or grade levels (grades 6–8). A list of 21 print resources, audiovisual materials, and films is included. (AM)

Order from: WEEA Publishing Center
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
Telephone no.: 617–969–7100; Toll free no.: 800–225–3088; $15.00.

ENC-000234

Title: **The engineering adventure. BETA release 1.9 (1993)**

Author: Developed by Creative Enterprises

Date: c.1993

Publisher: Long Beach, CA: Creative Enterprises

Grade level: 7; 8; 9; 10; 11; 12

Target audience: Bilingual students; Hispanic-American students; Minority students

Material type: Career guidance materials; CD-ROM; Macintosh software

Language: Bilingual; English; Spanish

Standards/ guidelines: California Science Framework. Middle School. Career Development.
Texas Science Framework. Middle School. Career Development.

Subjects: Aeronautical engineering; Career exploration; Chemical engineering; Civil engineering; Computer engineering; Engineering; Environmental engineering; Industrial engineering; Mechanical engineering; Sciences.

Abstract: This CD-ROM is designed to encourage minority and other middle school students to enter engineering, science, and other technical careers. This interactive computer program uses graphics, sound, and QuickTime movies to introduce the following fields of engineering: civil, mechanical, chemical, environmental, electrical, aerospace, computer, industrial, and others. Each career field is presented through eight modules: 1) Descriptions, which provides textual and voice descriptions of the selected field; 2) Adventures, in which the student designs and tests a real engineering project; 3) Plant Trips, in English and Spanish, that portray successful minority engineers and technicians at work; 4) Helping Groups, which presents the many supporting organizations that help guide students through school into professional life as scientists or engineers; 5) Career in Engineering, in which students can explore the variety of fields from which an engineer can choose such as designing and testing, research, field work, and others; 6) Professional Life, in which students learn about an engineer's life; 7) Academic Requirement, which suggests courses that the student in middle school, high school, and college must consider when pursuing a scientific or technical career; and 8) Other Technical and Science Careers, which explores other possibilities for careers in mathematics, science, and technical fields. A teacher's manual includes instructions on installing the computer program, integrating the program into curriculum, and provides material lists and descriptions of suggested hands-on activities, and a student career preference self-evaluation sheet. The software is also available on disks. (CCC)

Evaluation: Developer Field Tests: Compton, CA School District; Whaley Middle School; 1993. New York City, NY; Cooper Union Outreach; 1993. Long Beach, CA; DeMille Middle School; 1993.
Others in progress.

Equipment: System requirements: 4 MB RAM; 17 MB hard disk or CD; System 6.0.8 or higher (System 7.0 recommended); color Macintosh computer.

Funding: National Science Foundation; Grant no.: MDR–9050186.

Order from: Creative Enterprises
5354 East 2nd Street, Suite 200
Long Beach, CA 90803
Telephone no.: 310–987–3450; FAX no.: 310–987–3449; $100.00.

Title:	**Fizz & Martina at Blue Falls High = Fizz y Martina en la escuela superior de Blue Falls**
Series:	The wonderful problems of Fizz & Martina; volume 1
Author:	Story and art by Tom Snyder, Peter Reynolds, and Annette LeBlanc; score by Tom Snyder
Date:	c.1992
Publisher:	Watertown, MA: Tom Snyder Productions, Inc.
Grade level:	4; 5; 6
Target audience:	Bilingual students; Hispanic-American students
Material type:	Kits; Resource units
Language:	English; Spanish
Standards/ Guidelines:	California Learning Assessment System (CLAS). NCTM standards (1989). Content Standards; K–12: Mathematics as communication. Guidelines for instructional practice; K–4: Cooperative work. 5–8: Actively involves students individually and in groups in exploring, conjecturing, analyzing, and applying mathematics in both a mathematical and a real-world context.
Subjects:	Addition; Arithmetic; Comparison; Cooperative learning; Division; Mathematics; Multiplication; Problem solving.
Abstract:	This is the first volume in a series of four cooperative learning, problem solving video and workbook packages that emphasize language development. Students speak and write the language of math as they solve problems. The package includes a video cassette, student workbooks, a teacher's guide, a Team Picker deck of cards, Budge Award Cards, and a supplementary booklet on creative math assessment. This volume is available in both English and Spanish. The series uses a 5-step process. In the first step, students watch a video episode, note pertinent information in their workbooks, then share their notes. When a math problem emerges in the story, the VCR is paused, and students begin the second step. Working in cooperative learning teams, students coach, or are coached by, other team members until every student has a thorough understanding of the math problem. Teams solve questions in their student workbooks. In the third step, the teacher randomly selects a team member to answer a question from the student workbook. In the fourth step, the teacher gives a Budge Award Card to every student on that team who provided correct written and verbal responses. After students have answered all three questions, the video is resumed, and students view the second act of that episode. In the fifth step, after both acts of an episode have been completed, students work on two activities in the workbook. Although designed for grades 4–6, activities are appropriate for many middle school students and remediation programs. (AM)

Evaluation: Published Reviews: Eiser, Leslie. "Math for a Reason: Math Education Programs That Comply with the National Council of Teachers of Mathematics Standards." *Technology & Learning*. March 1993. Vol. 13, Issue 6, p.52.

Furst, Miriam. "Videos That Help Students 'Talk Math.' " *Electronic Learning*. February 1992. Vol. 11, Issue 5, p.34.

Other series titles: Fizz & Martina conquer Project Sphinx (volume 2); Fizz & Martina do Hollywood (volume 3); Fizz & Martina 2% wiseguy, 98% same old kid (volume 4).

Order from: Tom Snyder Productions, Inc.
80 Coolidge Hill Road
Watertown, MA 02172–9718
Toll free no.: 800–342–0236; FAX no.: 617–926–6222;
1 kit (English version): Order no.: BLU–K; $179.95.
1 kit (Spanish version): Order no.: SPN–K; $179.95.

ENC-000125

Title: **Hands-on activities to encourage girls in mathematics**

Author: Regina Baron Brunner

Date: Not indicated

Publisher: Allentown, PA: Cedar Crest College

Grade level: 7; 8; 9

Target audience: Female students

Material type: Activity books

Language: English

Subjects: Geometric concepts; Geometric constructions; Geometry; Mathematics; Models; Polyhedra; Puzzles; Topology.

Abstract: This collection of seven activities for students in grades 7–9 emphasizes spatial visualization, problem solving, and logical reasoning. The booklet contains an introduction, an historical note about the woman who invented curve stitching (a technique for creating curved lines from a series of straight lines), instructions for each activity, and a bibliography. Hands-on activities are performed in collaborative groups and use inexpensive manipulatives to illustrate mathematical concepts. Activities are divided into two broad categories. In the first category, Geometry and Spatial Visualization, students create and identify a 36-sided polygon, hexagons, equilateral triangles, and a tear-drop design (the result of forming two parabolas) with paper plates and colored yarn. Students use toothpicks and clay to model the five Platonic Solids: tetrahedron, hexahedron, octahedron, dodecahedron, and icosahedron. In the second category, Logical

and Critical Thinking, students solve puzzles using organizational charts and perform investigations in topology while keeping a journal of trials and results. (LZ)

Order from: Cedar Crest College
100 College Drive
Allentown, PA 18104–6196
Telephone no.: 215–437–4471; FAX no.: 215–437–5955; $6.00.

ENC-000138

Title: **Laboratories and classrooms in science and engineering**

Series: Barrier-free in brief: laboratories and classrooms in science and engineering

Author: Project on Science, Technology and Disability, Directorate for Education and Human Resources Programs, American Association for the Advancement of Science

Date: c.1991

Publisher: Washington, DC: American Association for the Advancement of Science

Grade level: No grade level specified

Target audience: Administrators; Program directors; Teachers

Material type: Reference materials

Language: English

Subjects: Accessibility (for disabled); Classroom techniques; Disabilities; Laboratory training; Mathematics; Sciences.

Abstract: This guide provides information and resources on adapted facilities, teaching styles, and general accessibility that address the needs of students with disabilities in educational institutions as well as research laboratories. The booklet defines barrier-free laboratories and classrooms and discusses the need for these facilities. Steps for organizing a barrier-free laboratory or classroom include talking with the student concerned, identifying students with disabilities while considering their willingness to be identified, advising students, making special arrangements for testing and evaluation, and making facilities physically accessible. The booklet suggests strategies for creating classroom and laboratory accommodations that enhance accessibility. Strategies include enhancing basic lecture and discussion techniques in the classroom, encouraging students to participate actively in the laboratory, and modifications that aid in the use of laboratory technology. In addition, the booklet presents accommodations according to the type of disability. A checklist for instructors and administrators is provided to aid in evaluation of parking, outdoor access, indoor access, and restrooms. A resource section lists 29 sources of additional information. (LZ)

Funding: National Science Foundation Grant no.: MDR 8950332.

Other series titles: Access in word and deed. Access to science literacy. Workshops and conferences for scientists and engineers.

Order from: American Association for the Advancement of Science
1333 H Street NW
Washington, DC 20005
Telephone no.: 202–326–6630 (V/TDD);
ISBN 0–87168–421–6; Publication no.: 91–27S; Free.

NOTE: This publication is available on cassette for print-impaired persons through Recording for the Blind.

ENC-000190

Title: **Math for girls and other problem solvers**

Author: Diane Downie, Twila Slesnick, Jean Kerr Stenmark

Date: c.1981

Publisher: Berkeley, CA: EQUALS, Lawrence Hall of Science, University of California (Berkeley)

Grade level: 1; 2; 3; 4; 5; 6; 7; 8; 9

Target audience: Female students

Material type: Activity books

Language: English

Subjects: Arithmetic; Art; Averaging (Mathematics); Career exploration; Combinatorics; Data collection; Functions (Mathematics); Geometry; Graphing (Mathematics); Mathematics; Mathematics anxiety; Sampling; Sex differences; Statistics (Mathematics); Symmetry; Topology.

Abstract: This book is a source of ideas for those interested in establishing and teaching a Math for Girls class for students ages 7–13 in a school, museum, recreation center, or private educational organization. The book includes activities, ideas, and strategies designed to increase problem solving skills, encourage participation of girls and women in mathematics, decrease fearful attitudes, and increase positive feelings toward mathematics. Activities are designed to create a cooperative, nonthreatening, supportive atmosphere that encourages intellectual exploration and risk-taking for girls.

Activities in the book belong to one or more of five strands and include nonstandard problems requiring logical and creative thinking. The first strand, Using Logic, Strategies, and Patterns, focuses on systematic problem solving techniques introduced in a recreational format. Activities in the second strand, Breaking Set, involve a seemingly impossible problem. Solutions require that students remain open to nonobvious processes. Activities include topology rope

puzzles, mystery stories, number patterns, and classic math problems. In the third strand, Creative Thinking, Estimating, and Observing, problems without a predesignated right answer are posed. Activities require inventing, pretending, building, experimenting, giving detailed directions or descriptions, constructing models, participating in non-verbal group constructions, and observing events. In the fourth strand, Spatial Visualization, students examine optical illusions, symmetry in art, paper folding, effects of reflection and rotations, and so forth. The fifth strand is a career component. The intent is to make students aware of their own biases and those of society.

Each activity identifies the strand to which it belongs, the mathematical content, a rationale, instructions, lists needed materials, and variations. The book includes plans for an 8-day course and utilizes Bruner's notion of the spiraling curriculum; activities from several or all of five different strands appear in each day's plan. Each day's plan could also serve as an independent 90-minute or 2-hour workshop. (AM)

Evaluation: Published Reviews: *Ms.* October 1982. Vol. 11, p. 83.

Order from: EQUALS, Lawrence Hall of Science
University of California
Berkeley, CA 94720
Telephone no.: 510–642–8718
ISBN 0–912511–01–X; $10.00.

ENC–000389

Title: **A mindset for math: techniques for identifying and working with math-anxious girls**

Author: The Ohio State University; Judy Genshaft, Jack Naglieri, project directors

Date: c.1987

Publisher: Columbus, OH: The Ohio State University

Grade level: 8; 10

Target audience: Teachers

Material type: Activity books

Language: English

Subjects: Attitude change; Attitudes; Female students; Fractions; Mathematics; Mathematics achievement; Mathematics anxiety; Order of operations (Mathematics); Participation; Statistics (Mathematics)

Abstract: This guide describes the techniques used in a 6-week, 12-lesson, math-anxiety treatment project for 8th- and 10th-grade female

students. The project is designed to reduce anxiety and to improve attitudes toward, and achievement in, mathematics by 1) helping math-anxious girls know when they are nervous and to identify experiences that make them nervous, 2) giving them specific tools to counteract irrational fears, 3) providing them with interesting experiences in basic mathematical operations, and 4) instilling an understanding of the wide variety of mental activities encompassed in the word "mathematics." The aim is to show math-anxious students that mathematics is an integral part of their lives and that mathematics does not have to be intimidating.

The guide includes four sections. The first section includes a 4-step process to identify math-anxious girls. Patterns of behavior and achievement, as well as signs of anxiety, are described. Two samples of self-rating instruments that may be used to identify math-anxious students are included. The second section includes self-instruction activities. Activities are designed to "re-educate" math-anxious students. Students learn to recognize/identify personal signs of anxiety, identify upsetting situations, identify negative and positive "self-talk math statements," and use methods for defusing tension.

The third section includes math activities that were selected to "re-form" students' ideas about math and emphasize the presence of mathematical concepts in the total environment. Activities are intended to help bridge the gap between concrete and abstract thinking. Students identify math symbols and concepts in their daily lives, experiment with codes, experiment with using straight lines to create curved designs, learn an acronym for the order of operations, act out math vocabulary words in a "math parlor" game, and use jelly beans to understand statistical prediction and fractions. Activities in the first three sections include reproducible student pages. The fourth section includes suggestions for implementing an anxiety-reduction program. Two references and 13 items for suggested reading are included. (AM)

Order from: WEEA Publishing Center
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
Toll free no.: 800–225–3088; FAX no.: 617–969–5979; 1 text: $8.00.

ENC-000113

Title: **Native American culture across the math & science curriculum: multidisciplinary units of inclusion**

Author: Penny S. O'Brien, coordinator; Denise Deane White, director; Carol Ann Kissam, editor

Date: c.1991

Publisher: Potsdam, NY: Project Future, Potsdam College of the State University of New York

Grade level: 4; 5; 6; 7; 8; 9; 10; 11; 12

Target audience: Native American students

Material type: Teaching units; Lesson plans

Language: English

Standards/ guidelines: New York State Syllabus

Subjects: Anthropology; Archaeology; Art; Biology; Chemistry; Consumer protection; Earth science; Ecology; English; Geography; Global studies; Graphing (Mathematics); Health sciences; History; Home economics; Humanities; Mathematics; Mental health; Native American culture; Nutrition; Sciences; Social studies; Sociology; Topography; Trigonometry.

Abstract: This book includes 14 curriculum units written to meet the learning styles associated with Native American students. Designed for students in grades 4–12, units integrate many disciplines and include direct references to Native American issues. Teaching strategies include an appeal to observational skills, supervised participation, unsupervised practice, an obvious practical value to learning, and involvement of students in a personal competition rather than in competition with peers.

Lesson plan topics include: links between cultures and diseases; comparisons of Native American herbal medicines, home remedies, and modern prescription medicines; archaeological research methods; ecology; nutrition; chemical bonding; interrelationships between geography, climate, and human culture; Northeastern Indian ability to live in harmony with the physical environment; classification scheme of matter; mixtures and compounds; physical and chemical change; laboratory activities involving physical separation of mixtures, chemical reactions, and phase changes; problem identification and research design; writing research proposals, conducting research, and preparing research reports; and trigonometry. A variety of social issues are addressed in additional lessons.

Lessons emphasize presentation skills, research skills, cooperative learning, discussing, critical thinking, problem solving, scientific method, mapping, graphing, and interpreting data. Assessment methods include informal observation, evaluation of student projects, presentations, or participation, tests, and quizzes. Bibliographies and suggested resources are provided for each unit. Appendices include biographies of prominent Native Americans, lists of Mohawk herb cures, demographics of Native Americans, worksheets, maps, resource lists of museums and cultural organizations, lists of major tribes, lecture notes, quizzes, American Indian recipes, laboratory activities, resume guides. (AM)

Funding: Dwight D. Eisenhower Title IIA Higher Education Competitive Cooperative Demonstration Project; Grant no.: G008302832.

Order from: Project Future, Potsdam College of the State University of New York 236 Sisson Hall, Pierrepont Ave., Potsdam, NY 13676–2294. Telephone no.: 314–267–2622; FAX no.: 314–267–2342; $10.00.

ENC-000351

Title: **Operation SMART research tool kit: a package of program evaluation activities for girls**

Author: Girls Clubs of America, Inc.

Date: c.1988

Publisher: Indianapolis, IN: Girls Clubs of America, Inc., National Resource Center

Grade level: 4; 5; 6; 7; 8; 9

Target audience: Female students

Material type: Kits; Tests and assessments

Language: English

Subjects: Assessment; Attitudes; Career awareness; Equity; Mathematics; Sciences

Abstract: This "tool kit" of program evaluation activities for girls (ages 9–14) contains a staff handbook, a supplement to the staff handbook, a "Facts and Reflections on Careers for Today's Girls" booklet, and 13 activity envelopes. The activities are designed to empower young people who have traditionally been left out of math and science including girls, members of ethnic and racial minorities, and children with disabilities. The staff handbook contains information about the program and activities that are to be conducted directly by the girls, who learn research skills as they assess their own and others' attitudes related to math, science, and technology.

Each assessment activity evaluates one or more of the following program components: math-related activities such as graphing, measuring, counting, mapping, working with shapes, and probability; science activities; hands-on science and technology activities; career exploration; field trips; attitudes and stereotypes; nontraditional activities; and course selection. An Evaluation Design Chart is provided to help record responses and to design the evaluation based on those responses. Suggestions for processing the data are provided, as well as 15 references for further reading.

The supplement to the staff handbook provides changes to the instructions for several of the original tools based on empirical experiences with the tool kit to date. The envelopes contain instructions, forms, and most of the materials necessary to complete the assessment activities including math attitude scales, scoring sheets, interview forms, survey forms, situation cards, name tags, outcome sheets, lists of careers, career cards, course cards, activity booklets, wall charts, rating forms, photos, tally sheets, flash cards, sorting cards, sorting envelopes, checklists, number lines, and a leader rating form. (WAJ)

Order from: Girls Inc., National Resource Center
441 West Michigan Street
Indianapolis, IN 46202
Telephone no.: 317–534–7546; 1 kit: $50.00.

ENC-000128

Title: **Piezas y diseños: un mosaic de matemáticas y ciencias = Pieces and patterns: a patchwork in math and science**

Series: AIMS program; Grades 5–9 series

Author: Judith Hillen, Arthur Wiebe, Dave Youngs, editors. Janet Dutrey, editor of Spanish edition

Date: c.1992

Publisher: Fresno, CA: AIMS Education Foundation

Grade level: 5; 6; 7; 8; 9

Target audience: Bilingual students; Hispanic-American students

Material type: Activity books; Integrated materials

Language: Bilingual; English; Spanish

Subjects: Geometric concepts; Geometry; Heat; Kinetics; Mathematics; Nutrition; Patterns (Mathematics); Sciences; Scientific methodology; Shadows; Statistics; Symmetry; Venn diagrams; Water.

Abstract: Activities Integrating Mathematics and Science (AIMS) books primarily integrate mathematics and science but also provide coordinating activities related to other curriculum areas including language arts, social studies, physical education, art, and music for grades K–9. The book consists of hands-on activities for grades 5–9 that provide the opportunity to explore patterns. In one activity students observe and identify regular and irregular polygons in nature, observe and identify kinds of symmetry, sketch major polygons in simulated nature pictures, and simulate a pattern in nature by tessellating regular polygons. Each activity generally includes the topic area, introductory statement, materials, key question, instructional information, management suggestions, procedure, discussion questions, extensions, and illustrated student worksheets. The student worksheets are written in both Spanish and English. A matrix of science processes keyed to the activities is provided and includes: observing, communicating, collecting and recording data, predicting, classifying, drawing conclusions, and interpreting data. A matrix of math skills keyed to the activities is provided and includes: measuring, comparing, graphing, estimating, problem solving, timing, and basic computation. The book includes a materials list (consumable and nonconsumable items) and a glossary. (LZ)

Evaluation: Published Reviews: Deal, Debby [science consultant]. "A Look at Project AIMS." *School Science and Mathematics.* January 1994. Vol. 94, Issue 1, pp. 11–14.

Order from: AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747–8120
Telephone no.: 209–255–4094; FAX no.: 209–255–6396; $14.95.

Title: **Primariamente física: investigaciones del sonido, la luz y la energía térmica para los grados K–3 = Primarily physics: investigations in sound, light, and heat energy for grades K–3**

Series: AIMS program; Grades K–4 series

Author: Judith Hillen, Evalyn Hoover, Sheryl Mercier, editors. Evalyn Hoover, Sheryl Mercier, Howard Larimer, Mike Walsh, Karen Adler, authors

Date: c.1992

Publisher: Fresno, CA: AIMS Education Foundation

Grade level: Kindergarten; 1; 2; 3

Target audience: Bilingual students; Hispanic-American students

Material type: Activity books; Integrated materials

Language: Bilingual; English; Spanish

Subjects: Acoustics; Energy; Heat; Light; Mathematics; Music; Physical sciences; Physics; Science; Sound; Temperature.

Abstract: Activities Integrating Mathematics and Science (AIMS) books primarily integrate mathematics and science, but also provide coordinating activities related to other curriculum areas including language arts, social studies, physical education, art, and music for grades K–9. This book is designed to teach primary physics concepts in grades K–3. The book consists of 32 hands-on activities investigating sound, light, and heat energy. Each activity generally includes the topic area, introductory statement, materials, key question, instructional information, management suggestions, procedure, discussion questions, extensions, and illustrated student worksheets. The student worksheets are written in both Spanish and English. A matrix of science processes keyed to the activities is provided and includes: observing, communicating, collecting/recording data, predicting, classifying, drawing conclusions, and interpreting data. A matrix of math skills keyed to the activities is provided and includes: measuring, comparing, graphing, estimating, problem solving, timing, and basic computation. The book includes a materials list (consumable and nonconsumable items) and a glossary. (TDB)

Evaluation: Published Reviews: Deal, Debby [science consultant]. "A Look at Project AIMS." *School Science and Mathematics*. January 1994. Vol. 94, Issue 1, pp. 11–14.

Order from: AIMS Education Foundation
P.O. Box 8120
Fresno, CA 93747–8120
Telephone no.: 209–255–4094; FAX no.: 209–255–6396;
ISBN 1–881431–34–7; $14.95.

ENC-000347

Title: **The problem solvers: people with disabilities in engineering careers**

Author: American Association for the Advancement of Science

Date: c.1993

Publisher: Washington, DC: American Association for the Advancement of Science; Pittsburgh, PA: The Video Difference, Inc.

Grade level: No grade level specified

Target audience: Disabled students; Learning disabled students; Physically disabled students; Students with multiple disabilities; Vision-impaired students

Material type: Career guidance materials; Videotapes

Language: English

Subjects: Accessibility (for disabled); Adaptive behavior; Assistive devices; Career awareness; Disabilities; Engineering; Sciences; Underrepresented groups.

Abstract: This video is about people with disabilities who have chosen engineering as their profession, as well as the "assistive" technology and social conditions that have facilitated their occupational adaptation. Several individuals engaged in various branches or schools of engineering are interviewed and portrayed in their work or educational environments. The video discusses some of the barriers that the disabled face including those that are physical (e.g., being able to enter buildings) and psychological (e.g., dealing with people who think that the disabled person is limited by her/his handicapping condition). The disabilities depicted include visual impairments, hearing impairments, physical handicaps, and learning disabilities. Assistive technology and a strong commitment are identified as key ingredients in the success stories of these individuals. Commitment is needed not only from the individual, but also from the community, the school administration, and/or the individual's family and friends. Several Federal and corporate programs that provide special attention and training to people with disabilities are described. Recent passage of The Americans with Disabilities Act (ADA) has required universities to provide support

services for students with disabilities. From an educational standpoint, the need for work experience in the the real world is emphasized. (WAJ)

Evaluation: Published Reviews: Hopkin, Karen. "The Problem Solvers: Engineers With Disabilities." *Science*. May 28, 1993, Vol. 260, p. 1349.

Specifications: 1 videocassette (VHS) (26 min.): sound, color, captioned; 1/2 in. + 1 discussion guide.

Funding: The Problem Solvers is part of the project "Access to Engineering" funded by the Directorate for Engineering of the National Science Foundation.

Order from: AAAS
P.O. Box 753
Waldorf, MD 20604
Telephone no.: 301–645–5643; (Mastercard/Visa orders);
1 videotape: Order no.: #93–155; $20.00.

ENC-000348

Title: **Science teams**

Author: Developed by the Consortium for Education Equity, Rutgers, The State University of New Jersey; teacher's manual by Aleta You Mastny, Sami Kahn, Sharon J. Sherman

Date: c.1991

Publisher: New Brunswick, NJ: Consortium for Educational Equity

Grade level: 3; 4; 5; 6; 7; 8

Target audience: Administrators; Curriculum supervisors; Science supervisors; Teachers

Material type: Professional development materials; Videotapes

Language: English

Subjects: Conservation; Cooperative learning; Ecology; Environmental education; Equity; Hands-on learning; Natural resources; Pollution; Sciences; Team training; Teamwork.

Abstract: This video and accompanying teacher's manual address two specific concerns: the underrepresentation of females and minorities in the mathematics, science, and technology fields; and the overall decrease of American students studying mathematics and science. The "Science Teams" program was created to increase elementary teachers' skills at using environmental science content, hands-on experiments, and cooperative learning techniques. The video depicts teachers and students engaged in various aspects of cooperative learning teams. Activities focus on environmental issues in which student teams collect and record data, analyze data, and make decisions based on their analysis. The teacher's manual, which may be used with the

video or without, provides a discussion of cooperative learning, an overview of team learning instructional techniques (group roles, team building, group investigation), and additional instructional strategies associated with cooperative learning. It includes 43 activities intended primarily for grade levels 3–8 on such topics as food chains and food webs, ecosystems, habitats, natural resources, the water cycle, rain forests, oceans, wildlife conservation, air and water pollution, landfills, acid rain, oil spills, recycling, and alternative energy sources; guidelines and resources for classroom use; glossaries; student worksheets; and annotated bibliographies. (WAJ)

Evaluation: Awards: National Educational Film and Video Festival. Bronze Apple, 1992.

Specifications: 1 videocassette (VHS) (22 min.): sound, color; 1/2 in.

Funding: United States Department of Education, Fund for the Improvement and Reform of Schools and Teaching, Dwight D. Eisenhower National Mathematics and Science Education Program; Grant no.: R168A90223–90. Geraldine R. Dodge Foundation. Victoria Foundation.

Order from: Consortium for Educational Equity, Rutgers University
Building 4090, Livingston Campus
New Brunswick, NJ 08903
Telephone no.: 908–932–2071; FAX no.: 908–932–0027.
1 set (videotape, manual): $150.00; 1 videotape: $110.00; 1 manual: $60.00.

Support: Contact the Consortium for Educational Equity for further information regarding the Science Teams regional training program.

ENC-000179

Title: **Scientific reasoning**

Series: SAVI/SELPH Project; Lower level modules

Author: SAVI/SELPH, Center for Multisensory Learning, Lawrence Hall of Science, The University of California, Berkeley

Date: c.1981

Publisher: Berkeley, CA: SAVI/SELPH, Center for Multisensory Learning, Lawrence Hall of Science, The University of California, Berkeley

Grade level: 4; 5; 6; 7

Target audience: Disabled students; Learning disabled students; Physically disabled students; Vision-impaired students

Material type: Braille materials; Kits; Teaching units

Language: English

Subjects: Aerodynamics; Exercise; Flotation; Pendulums; Sciences

Abstract: Science Activities for the Visually Impaired/Science Enrichment for Learners with Physical Handicaps (SAVI/SELPH) is a multisensory science enrichment program of nine modules designed for disabled and non-disabled students in grades 4–7. The program includes: printed activity instructions, student equipment kits, and a statement of educational philosophy for incorporating science into the curriculum of disabled students. The activities are designed for small groups working under close supervision. This module explores scientific reasoning. Activities require students to isolate one variable while controlling the others in order to perform experiments that test the effect of the isolated variable. Students investigate variables related to the distance they can broad jump, the effect of exercise on their heart rates, the behavior of pendulums,the outcomes of airplane flights along a line, and the number of washers that three rafts of different thicknesses can support. Follow Up sections after each activity provide mini-assessment activities. A matrix provides activity descriptions, science concepts, process skills, application skills, language development, and related learning resources for this module. (CCC)

Evaluation: Published Reviews: James, Melodee L. *Outdoor-Communicator*. Spring/Summer 1987. Vol. 19, pp. 32–37.

Developer Field Tests: San Francisco, CA. 1976–1981. Phase 1: Project staff taught and scripted activities in numerous classrooms. Phase 2: Each module used by at least 10 Bay Area special education teachers. Four forms of feedback collected to guide revision. Phase 3: Each module used by teachers in seven national test centers, including rural, suburban, and urban settings. Feedback guided the final revision.

Funding: United States Department of Health, Education and Welfare; Office of Education; Grant no.: G00–76–02944, G00–80–4991.

Other series titles: Communication. Environments. Environmental energy. Kitchen interactions. Magnetism and electricity. Measurement. Mixtures and solutions. Structures of life.

Order from: SAVI/SELPH, Center for Multisensory Learning
Lawrence Hall of Science
University of California Berkeley, CA 94720
Telephone no.: 510–642–8941;
1 folio set (module pamphlets only): $6.00; 1 kit: $111.00.

ENC-000196

Title:	**Wiskit: women in science resource kit**
Author:	WISEMCO; prepared by Nadine K. Hinton; edited by Lynn Edward Elfner
Date:	c.1990
Publisher:	Columbus, OH: Ohio Academy of Science
Grade level:	No grade level specified
Target audience:	Teachers
Material type:	Resource units
Language:	English
Subjects:	Equal education; Equity; Mathematics; Sciences
Abstract:	This resource kit is intended to assist educators in addressing equity and excellence in science and mathematics through their daily interactions with students. The kit contains the following written materials: 1) background information on equity and excellence in science and mathematics education; 2) a list of selected biographies of women scientists; 3) professional resources and sample classroom activities; and 4) names, addresses, and phone numbers of various organizations that are committed to equity and that provide information on science-related careers. The professional resources component of the kit contains four articles on fostering sex equity in math and science from the publication "Title IX Line" produced by the Center for Sex Equity in Schools. Two biographical sketches of women in science careers, profiling a mechanical engineer and two sisters who are medical doctors, are excerpted from the "Career Oriented Modules to Explore Topics in Science" (COMETS). Materials that supplement the biographies include a content quiz with answers, words to know, writing project ideas, and ideas for other projects following each biography. (LZ)
Note:	The Women in Science, Engineering, and Mathematics Consortium of Ohio (WISEMCO) was organized in 1986 to address the underrepresentation of women in science-related careers.
Order from:	The Ohio Academy of Science 1500 West Third Avenue, Suite 223 Columbus, OH 43212–2817 Telephone no.: 614–488–2228; Free.

Selected Readings on Equity

Breaking the Barriers: Helping Female and Minority Students Succeed in Mathematics and Science.

Beatriz C. Clewell, Bernice Taylor Anderson, and Margaret E. Thorpe. 1992. Jossey-Bass. Also available from Association for Supervision and Curriculum Development, 1250 North Pitt Street, Alexandria,VA 22314 ; Telephone: 703–549–9110.

This book outlines effective strategies and approaches and analyzes the structural components of successful intervention programs in mathematics and science for minorities and females. A lengthy Appendix presents case studies for 10 effective programs.

Contextual Factors in Education: Improving Science and Mathematics Education for Minorities and Women.

Michael Cole and Peg Griffin, Editors. 1987. Prepared for the National Research Council by the Wisconsin Center for Education Research, University of Wisconsin, 1025 West Johnson Street, Madison, WI 53706 ; Telephone: 608–263–4200.

This monograph synthesizes and presents a wide variety of research findings related to manipulating the school environment and using new technologies to maximize opportunities for children, especially females and minorities, to succeed in learning science and mathematics.

Do Your Female Students Say "No, thanks" to the Computer?

Jo Sanders. 1987. Women's Action Alliance, 370 Lexington Avenue, New York, NY 10017; Telephone: 212–532–8330.

This brochure explains why girls may avoid using computers and suggests strategies for teachers to change this behavior. A related and more detailed work, *The Neuter Computer: Computers for Boys and Girls*, by Jo Sanders and Antonia Stone, was published in 1986 by Neal-Schuman. This book describes learning activities as well as guidelines for planning and evaluating a computer equity program in school.

How Schools Shortchange Girls.

American Association of University Women (AAUW). 1993. Available from AAUW Sales Office, P.O. Box 251, Annapolis Junction, MD 20701–0251 ; Telephone: 800–225–9998.

This year-long study suggests that teachers pay less attention to girls than to boys. The curriculum commonly ignores or stereotypes females. Alternative teaching approaches for mathematics and science include varying student evaluations, providing more hands-on experiences, focusing on real life applications, encouraging writing and speech over rote memorization, fostering self-esteem, and utilizing collaborative strategies.

Lost Talent: The Underrepresentation of Women, Minorities, and Disabled Persons in Science.

J. Oakes. Rand Corporation. 1990. Available as ERIC Document ED 318 640.

This report summarizes research findings on cognitive, attitudinal, and school related factors that may cause these populations to avoid science study and science careers. Access to guidance and encouragement, tracking practices, limited course offerings in high schools, low teacher expectations, and prevalent teaching strategies are all factors in deflecting these students from further science study.

Minorities in Science: The Pipeline Problem.

Special issue of Science, Vol. 258, November 13, 1992.

This report presents an analysis of past efforts to remedy this problem as well as an overview of successful programs. Articles focus on issues of particular concern to African-Americans, Asian-Americans, Latinos, and Native Americans. Statistics on minority progress and a list of resources are included.

Nurturing At-Risk Youth in Math & Science: Curriculum and Teaching Considerations.

Randolph Tobias, Editor. 1992. National Education Service, 1610 West Third Street, P. O. Box 8, Bloomington, IN 47402; Telephone: 812–336–7700 or 800–733–6786.

Tobias and others contribute chapters that suggest curriculum strategies such as contextual learning that are designed to build student self-esteem and confidence as well as interest in studying math and science. Includes a section on ethnocentric approaches to teaching math and science.

Teaching Mathematics Effectively and Equitably to Females: Trends and Issues.

Katherine Hanson. 1992. Trends and Issues, Number 17. ERIC Clearinghouse on Urban Education. Available from the ERIC Clearinghouse on Urban Education, Teachers College, Columbia University, Institute for Urban and Minority Education, 525 West 120th Street, New York, NY 10027–9998 ; Telephone: 800–601–4868. Also available as ERIC Document ED 348 465.

This publication outlines ways that females can be encouraged to continue their mathematics education beyond basic courses. The author notes that while a questioning, challenging mode of discourse that fosters competition is common in many classrooms, girls are socialized to prefer more collaborative modes of interaction. Schools should also provide more opportunities for female students to become comfortable with computer technology.

Organizations and Programs With an Equity Focus

American Indian Science and Engineering Society.

1630 30th Street, Suite 301
Boulder, CO 80301
Telephone: 303–492–8658

AISES seeks to motivate and encourage students to pursue undergraduate and graduate studies, supports science fairs in grade schools, teacher training workshops, summer math/science sessions for high school students. Publishes *AISES Education Newsletter.*

Association for Women in Science.

1522 K Street NW, Suite 820
Washington, DC 20005
Telephone: 202–408–0742

AWIS promotes equal opportunities for women to enter the scientific workforce and achieve career goals. Affiliated with AAAS. Publishes *Bibliography of Science Education Resources.*

Benjamin Banneker Association.

Dr. Irvin E. Vance
Mathematics Department
Michigan State University
D322 Wells Hall
East Lansing, MI 48824
Telephone no.: 517–353–4693

The Association serves as an advocate for the mathematics-related educational and developmental needs of African-American children, develops programs and activities to encourage excellence, and offers solutions and policy alternatives for relevant educational issues. Affiliated with NCTM.

Consortium for Educational Equity.

Rutgers University
Building 4090, Livingston Campus
New Brunswick, NJ 08903
Telephone: 908–932–2071

The Consortium was established to assist schools in overcoming barriers to student achievement related to gender, race, national origin, language, culture, socioeconomic status, and disability. The Futures Unlimited and Just Between Sisters projects focus specifically on math and science education. This organization also provides regional training for Family Math, Family Science, and other equity related programs.

Eleanor Roosevelt Teacher Fellowships.

Eleanor Roosevelt Fund for Women and Girls
AAUW Educational Foundation
1111 Sixteenth Street NW
Washington, DC 20036–4873
Telephone: 202–785–7700

Teacher fellowships carry stipends ranging from $1,000 to $10,000 and are intended to help teachers to develop better understandings of how girls learn, think, and play, and to implement strategies in the classroom that help girls excel. Female elementary, middle, and secondary teachers with at least five consecutive years of full time teaching experience are eligible to apply.

Equity 2000.

Dr. Vinetta Jones, Equity 2000 National Director
The College Board
45 Columbus Avenue
New York, NY 10023–6992
Telephone: 212–713–8268

This college preparation project for minorities includes teacher institutes designed to enhance mathematics teaching techniques and demonstrate methods to overcome minority student math anxieties as well as guidance institutes to help counselors learn to better movitate students to consider college.

Girls and Science: Linkages for the Future.

Margaret Tunstall, Program Coordinator
American Association for the Advancement of Science
1333 H Street NW
Washington, DC 20005
Telephone: 202–326–6674

Program is designed to assist K–8 teachers, parents, and other interested persons. Offers a manual of hands-on activities, training kits, technical assistance and training at the local level, and access to other AAAS resources and materials, including the quarterly newsletter *Girls and Science.*

Quality Education for Minorities/Mathematics and Science Education Network.

1818 N Street NW, Suite 350
Washington, DC 20036
Telephone: 202–659–1818

The QEM/MSE Network is a nonprofit coalition of Historically Black Colleges and Universities, predominantly minority institutions, public school systems, major research universities, professional organizations, and others whose purpose is to share and disseminate information on mathematics and science education for Native Americans, African-Americans, Mexican-Americans, and Puerto Ricans; recommend systemic change; assist local schools in implementing education programs; and develop a national agenda of programs and projects.

Women and Mathematics Education.

Charlene Morrow, Executive Officer
Mt. Holyoke College
302 Shattuck Hall
South Hadley, MA 01075
Telephone: 413–538–2608

This group serves as a clearinghouse for ideas and resources that promote the mathematical education of girls and women, maintains a speakers' bureau, and is affiliated with and meets annually in conjunction with the National Council of Teachers of Mathematics.

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❑ Other: _____

Will you be requesting further information about specific programs listed in this publication or requesting that listed items be sent to you?
❑ Immediately
❑ In the next 2 to 3 weeks
❑ In the next month or two
❑ Perhaps in the future
❑ Probably will not use any items listed in this publication

Did you pass this newsletter on to another educator (either the original or a photocopy)? ❑ Yes ❑ No

OPTIONAL: Please Provide The Following Information To Help Us Better Serve You

Sex: ❑ Male ❑ Female

Age (Optional): _____

Ethnicity:
❑ American Indian or Alaskan Native
❑ Asian or Pacific Islander
❑ Black, not of Hispanic origin
❑ Hispanic
❑ White, not of Hispanic origin
❑ Other _____

Do you have easy access to a(n): ❑ Macintosh computer ❑ IBM/PC or compatible

Do you have easy access to a computer that: ❑ Has a modem ❑ Has a CD-ROM drive

Do you have easy access to: ❑ The Internet ❑ Other local, State, regional, or commercial networks (Name the other network(s): _____)

How would you describe your computer skills? ❑ High ❑ Medium ❑ Low ❑ None

(Continued on Other Side)

For All Educators (please check all that apply):

Years of K–12 teaching experience? _____ Is your institution: ❑ Public ❑ Private

Are you currently: ❑ A classroom teacher ❑ A school department chair ❑ A curriculum specialist
❑ A school administrator ❑ A district administrator ❑ A librarian
❑ A teacher educator ❑ A college faculty member ❑ Other _____

Is your area: ❑ Science education ❑ Mathematics education ❑ Elementary education
❑ Some other area _____

Teachers, please circle those grades at which you teach
Administrators, circle those for which you have responsibility K 1 2 3 4 5 6 7 8 9 10 11 12
Teacher educators, circle those for which you prepare teachers

For K–12 Teachers and Administrators:

Your school designation (e.g., Elementary, Middle, High, . . .): _____

Would you describe your district as: ❑ Rural ❑ Suburban ❑ Urban

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Directory of Eisenhower Mathematics and Science Regional Consortia

Appalachian Region

Eisenhower Math/Science Consortium at AEL
Pam Buckley, Director
Appalachia Educational Laboratory
PO Box 1348
Charleston, WV 25325
Phone: 304–347–0400 • Fax: 304–347–0487
States Served: Kentucky, Tennessee, Virginia, West Virginia

Central Region

Eisenhower High Plains Consortium for Mathematics and Science
John Sutton, Director
Mid-continent Regional Education Laboratory
2550 South Parker Road, Suite 500
Aurora, CO 80014
Phone: 800–949–6387 • Fax: 303–337–3005
States Served: Colorado, Kansas, Missouri, Nebraska, North Dakota, South Dakota, Wyoming

Mid-Atlantic Region

Mid-Atlantic Consortium for Mathematics and Science Education
Keith Kershner, Director
Research for Better Schools
444 North Third Street
Philadelphia, PA 19123
Phone: 215–574–9300 • Fax: 215–574–0133
States Served: Delaware, Washington, DC, Maryland, New Jersey, Pennsylvania

Midwestern Region

Midwest Consortium for Mathematics and Science Education
Gil Valdez, Director
North Central Regional Education Laboratory
1900 Spring Road, Suite 300
Oak Brook, IL 60521
Phone: 708–571–4700 • Fax: 708–571–4716
States Served: Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, Wisconsin

Northeast and Islands Region

Regional Alliance for Mathematics and Science Education Reform
Eileen Ferrance and Bob McLaughlin, Co-Directors
300 Brickstone Square, Suite 900
Andover, MA 01810
Phone: 508–470-0098 • Fax: 508–475–9220
States/Areas Served: Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont, Puerto Rico, Virgin Islands

Northwest Region

Northwest Consortium for Mathematics and Science Teaching
Rob Larson, Director
Northwest Regional Educational Laboratory
101 SW Main Street, Suite 500
Portland, OR 97204
Phone: 503–275-9500 • Fax: 503–275–9489
States Served: Alaska, Idaho, Montana, Oregon, Washington

Pacific Region

Pacific Mathematics and Science Regional Consortium
Rick Davis, Director
Pacific Region Educational Laboratory
828 Fort Street Mall, Suite 500
Honolulu, HI 96813
Phone: 808–533–6000 • Fax: 808–533–7599
States/Areas Served: American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia (Chuuk, Kosrae, Pohnpei, Yap), Guam, Hawaii, Republic of the Marshall Islands, Republic of Palau

Southeastern Region

SERVE Eisenhower Consortium for Mathematics and Science Education
Francena Cummings, Director
SouthEastern Regional Vision for Education
345 South Magnolia Drive, Suite D–23
Tallahassee, FL 32301–2950
Phone: 904–922–8533 • Fax: 904–922–8068
States Served: Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina

Southwestern Region

Southwest Consortium for the Improvement of Mathematics and Science Teaching
Wes Hoover, Director
Southwest Educational Development Laboratory
211 East Seventh Street
Austin, TX 78701
Phone: 512–476–6861 • Fax: 512–476–2286
States Served: Arkansas, Louisiana, New Mexico, Oklahoma, Texas

Western Region

Far West Eisenhower Regional Consortium for Science and Mathematics Education
Art Sussman, Director
Far West Laboratory for Educational Research and Development
730 Harrison Street
San Francisco, CA 94107
Phone: 415–241–2730 • Fax: 415–241–2746
States Served: Arizona, California, Nevada, Utah

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